

AMENDMENTS TO THE CLAIMS:

1. (Canceled)

2. (Currently Amended) An interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals, the interference-signal removing apparatus comprising:

an input-signal control circuit operable to restrict an effective word length of a digital value of respective input signals in order to set the wide-band signals and the interference signals having comparatively low levels to the quantization-noise levels or lower;

an interference-signal estimation circuit operable to estimate the interference signals included in the input signals in accordance with the input signals whose effective word length is restricted;

an interference-signal extraction circuit operable to extract the interference signals include in the input signals in accordance with an estimation result by the interference-signal estimation circuit; and

an interference-signal removal circuit operable to remove the extracted interference signals from the input signals.

3. (Previously Presented) The interference-signal removing apparatus according to claim 2, wherein

the interference-signal extraction circuit extracts the interference signals from the input signals whose effective word lengths are restricted.

4. (Currently Amended) An interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals, the interference-signal removing apparatus comprising:

an input-signal control circuit operable to estimate levels of the interference signals included in the input signals in accordance with the input signals, generate pseudonoises in accordance with the estimation result and add the generated pseudonoises to the input signals in order to set the wide-band signals and the interference signals having comparatively low levels to the quantization-noise levels or lower ~~add noises to the input signals;~~

an interference-signal estimation circuit operable to estimate the interference signals included in the input signals in accordance with the input signals to which noises are added;

an interference-signal extraction circuit operable to extract the interference signals included in the input signals in accordance with an estimation result by the interference-signal estimation circuit; and

an interference-signal removal circuit operable to remove the extracted interference signals from the input signals.

5. (Previously Presented) The interference-signal removing apparatus according to claim 4, wherein

the interference-signal extraction circuit extracts the interference signals from the input signals to which noises are added.

6. (Currently Amended) An interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals, the interference-signal removing apparatus comprising:

an input-signal control circuit operable to multiply the input signals by a control coefficient of less than 1 in order to set the wide-band signals and the interference signals having comparatively low levels to the quantization-noise levels or lower;

an interference-signal estimation circuit operable to estimate the interference signals included in the input signals in accordance with the input signals that are multiplied by the control coefficient;

an interference-signal extraction circuit operable to extract the interference signals included in the input signals in accordance with an estimation result by the interference-signal estimation circuit; and

an interference-signal removal circuit operable to remove the extracted interference signals from the input signals.

7. (Previously Presented) The interference-signal removing apparatus according to claim 6, wherein

the interference-signal extraction circuit extracts the interference signals from the input signals multiplied by the control coefficient.

8. (Previously Presented) The interference-signal removing apparatus according to claim 2, wherein

the input-signal control circuit comprises an interference-signal-level estimation circuit operable to estimate levels of the interference signals included in the input signals, and operable to control the input signals in accordance with estimated interference-signal levels.

9. (Canceled)

10. (Previously Presented) The interference-signal removing apparatus according to claim 6, wherein

the input-signal control circuit comprises an interference-signal-level estimation circuit operable to estimate levels of the interference signals included in the input signals, and operable to control the input signals in accordance with estimated interference-signal levels.

11. (Canceled)

12. (Currently Amended) A base-station system of mobile-communication systems comprising:

an interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals

to supply signals radio-received from a mobile-station to the interference-signal removing apparatus and remove the interference signals included in the signals,

wherein the interference-signal removing apparatus comprises:

an input-signal control circuit operable to restrict an effective word length of a digital value of respective input signals in order to set the wide-band signals and the interference signals having comparatively low levels to the quantization-noise levels or lower;

an interference-signal estimation circuit operable to estimate the interference signals included in the input signals in accordance with the input signals whose effective word length is restricted;

an interference-signal extraction circuit operable to extract the interference signals included in the input signals in accordance with estimation results by the interference-signal estimation circuit; and

an interference-signal removal circuit operable to remove the extracted interference signals from the input signals.

13. (Currently Amended) A base-station system of mobile-communication systems comprising:

an interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals

to supply signals radio-received from a mobile-station to the interference-signal removing apparatus and remove the interference signals included in the signals,

wherein the interference-signal removing apparatus includes comprises:

an input-signal control circuit operable to estimate levels of the interference signals included in the input signals in accordance with the input signals, generate pseudonoises in accordance with the estimation result and add the generated pseudonoises to the input signals in order to set the wide-band signals and the interference signals having comparatively low levels to the quantization-noise levels or lower add noises to the input signals;

an interference-signal estimation circuit operable to estimate the interference signals included in the input signals in accordance with the noise-added input signals;

an interference-signal extraction circuit operable to extract the interference signals included in the input signals in accordance with estimation results by the interference-signal estimation circuit; and

an interference-signal removal circuit operable to remove the extracted interference signals from the input signals.

14. (Currently Amended) A base-station system of mobile-communication systems comprising:

an interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals

to supply signals radio-received from a mobile-station to the interference-signal removing apparatus and remove the interference signals included in the signals,

wherein the interference-signal removing apparatus comprises:

an input-signal control circuit operable to multiply the input signals by a control coefficient of less than 1 in order to set the wide-band signals and the interference signals having comparatively low levels to the quantization-noise levels or lower;

an interference-signal estimation circuit operable to estimate the interference signals included in the input signals in accordance with the input signals multiplied by the control coefficient;

an interference-signal extraction circuit operable to extract the interference signals included in the input signals in accordance with estimation results by the interference-signal estimation circuit; and

an interference-signal removal circuit operable to remove the extracted interference signals from the input signals.

15. (Canceled)

16. (Currently Amended) A diversity reception system comprising:

an interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals on at least one branch to make it possible to supply a signal of the at least one branch to the

interference-signal removing apparatus and remove the interference signals included in the signals by the interference-signal removing apparatus,

wherein the interference-signal removing apparatus comprises:

an input-signal control circuit operable to restrict an effective word length of a digital value of respective input signals in order to set the wide-band signals and the interference signals having comparatively low levels to the quantization-noise levels or lower;

an interference-signal estimation circuit operable to estimate the interference signals included in the input signals in accordance with the input signals whose effective word length is restricted;

an interference-signal extraction circuit operable to extract the interference signals included in the input signals in accordance with estimation results by the interference-signal estimation circuit; and

an interference-signal removal circuit operable to remove the extracted interference signals from the input signals.

17. (Currently Amended) A diversity reception system comprising:

an interference-signal removing apparatus operable to remove narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals on at least one branch to make it possible to supply a signal of the at least one branch to

the interference-signal removing apparatus and remove the interference signals included in the signal by the interference-signal removing apparatus,

wherein the interference-signal removing apparatus comprises:

an input-signal control circuit operable to estimate levels of the interference signals included in the input signals in accordance with the input signals, generate pseudonoises in accordance with the estimation result and add the generated pseudonoises to the input signals in order to set the wide-band signals and the interference signals having comparatively low levels to the quantization-noise levels or lower add noises to the input signals;

an interference-signal estimation circuit operable to estimate the interference signals included in the input signals in accordance with the noise-added input signals;

an interference-signal extraction circuit operable to extract the interference signals included in the input signals in accordance with estimation results by the interference-signal estimation circuit; and

an interference-signal removal circuit operable to remove the extracted interference signals from the input signals.

18. (Currently Amended) A diversity reception system comprising:

an interference-signal removing apparatus for removing narrow-band interference signals from input signals including wide-band desired signals and the narrow-band interference signals on at least one branch to make it possible to supply a signal of the at least one branch to the

interference-signal removing apparatus and remove the interference signals included in the signal by the interference-signal removing apparatus,

wherein the interference-signal removing apparatus comprises:

an input-signal control circuit operable to multiply the input signals by a control coefficient of less than 1 in order to set the wide-band signals and the interference signals having comparatively low levels to the quantization-noise levels or lower;

an interference-signal estimation circuit operable to estimate the interference signals included in the input signals in accordance with the input signals multiplied by the control coefficient;

an interference-signal extraction circuit operable to extract the interference signals included in the input signals in accordance with estimation results by the interference-signal estimation circuit; and

an interference-signal removal circuit operable to remove the extracted interference signals from the input signals.